Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
Review of Part 15 and other Parts of the	)	ET Docket No. 01-278
Commission's Rules	)	RM-9375
	)	RM-10051

REPLY COMMENTS OF XM RADIO INC.

XM Radio Inc. ("XM") hereby files these Reply Comments in the above-captioned proceeding in which the Commission proposes to modify its emissions limits on certain unlicensed devices operating above 2 GHz. XM notes that many commenters are concerned with the proliferation of unlicensed devices and their potential to interfere with licensed services. XM continues to urge the Commission to take prompt action to adopt the reasonable limits on out-of-band emissions of unlicensed devices proposed by XM to protect Satellite Digital Audio Radio Service ("SDARS") customers.

Background

In October 2001, the Commission released a Notice of Proposed Rulemaking ("NPRM") in the above-captioned proceeding proposing to modify its emissions limits on certain unlicensed devices operating above 2 GHz.[1] The Commission stated that a review is needed to ensure "continued growth in the area of unlicensed devices while protecting against harmful interference to authorized services." NPRM at ¶ 2.

---

1 *See* Review of Part 15 and Other Parts of the Commission's Rules, *Notice of Proposed Rulemaking and Order*, ET Docket No. 01-278 (Oct. 15, 2001) ("NPRM").

In response to the NPRM, XM filed Comments emphasizing the need for the Commission to update the limits on out-of-band emissions by unlicensed devices to protect SDARS consumers.[2] XM urged the Commission to establish, effective 18 months after adoption, an out-of-band emissions limit into the SDARS band (2320-2345 MHz) of no more than 18 μV/m at 3 meters measured in a 2 MHz interval for all unlicensed devices operating exclusively inside of vehicles and 8.6 μV/m at 3 meters measured in a 1 MHz interval for unlicensed devices operating in all other environments. XM at 18-21. XM urged the Commission to apply these emissions limits to the following unlicensed devices: (i) spread spectrum and other unlicensed devices operating pursuant to Part 15 of the Commission's rules; (ii) ISM devices operating in the 2400-2483.5 MHz band pursuant to Part 18 of the Commission's rules; and (iii) family radios operating pursuant to Part 95 of the Commission's rules on Channels 8-14 at 467 MHz. XM explained that compliance with these limits is feasible, can be done at minimal cost, and that some unlicensed device manufacturers are already meeting these proposed emissions limits. XM at 22. Sirius Satellite Radio Inc. ("Sirius"), the other SDARS licensee, also filed Comments urging the Commission to update the out-of-band emissions limits for unlicensed devices to protect SDARS receivers.[3] Sirius proposed an out-of-band emissions limit for Part 15 and Part 18 devices into the 2320-2345 MHz band of no more than 8.6 μV/m at 3 meters measured in a 1 MHz interval. Sirius at 2.[4]

---

2 Comments of XM Radio Inc., ET Docket No. 01-278 (Feb. 12, 2002) ("XM").

3 Comments of Sirius Satellite Radio Inc., ET Docket No. 01-278 (Feb. 12, 2002) ("Sirius") (attaching Petition for Rulemaking).

4 Unlike Sirius's Comments, XM's Comments also expressed concern with out-of-band emissions from family radios operating on channels 8-14 at 467 MHz, whose transmitted fifth harmonic falls within XM's, but not Sirius's, licensed frequency band.

Other commenters from the satellite industry discussed how out-of-band emissions from unlicensed radar detectors are causing debilitating interference to very small aperture terminals ("VSATs") operating in the C-, Ku-, and Ka-bands,[5] as well as to other types of satellite operations, including telemetry, tracking, and control ("TT&C") earth stations.[6] To protect satellite operations, many commenters urged the Commission to impose more stringent emissions limits on radar detectors. Comsearch at 5; Hughes at 7; Loral at 4-5; SIA at 3; SES at 6-7; Starband at 16-17. In addition, many satellite network service providers discussed the need for the Commission to generally address the issue of interference from all unlicensed devices to licensed satellite services. Hughes at 2, 7; SIA at 5; SES at 8-9. Similarly, Uniden America Corporation ("Uniden") urged the Commission to abandon its *ad hoc* approach to setting emissions limits for certain unlicensed devices and to instead set a reasonable emissions standard for all unlicensed devices operating above 960 MHz and to apply that standard to all frequency bands.[7]

---

5 Comments of Comsearch, ET Docket No. 01-278, at 2-3 (Feb. 12, 2002) ("Comsearch"); Comments of Hughes Network Systems, Inc., ET Docket No. 01-278, at 4-5 (Feb. 12, 2002) ("Hughes"); Comments of Loral Space & Communications Ltd., ET Docket No. 01-278, at 1-2 (Feb. 12, 2002) ("Loral"); Comments of PanAmSat Corporation, ET Docket No. 01-278, at 2 (Feb. 12, 2002) ("PanAmSat"); Comments of Satellite Industry Association, ET Docket No. 01-278, at 2 (Feb. 12, 2002) ("SIA"); Comments of SES Americom, Inc., ET Docket No. 01-278, at 2-4 (Feb. 12, 2002) ("SES"); Comments of Spacenet Inc. and StarBand Communications, Inc., ET Docket No.01-278, at 4-7 ("Starband").

6 *See* Loral at 2 (noting interference from radar detectors to satellite news gathering systems); PanAmSat at 2-3 (noting interference from radar detectors to TT&C stations); SIA at 3.

7 See Comments of Uniden America Corporation, ET Docket No. 01-278, at 2 (Feb. 12, 2002) ("Uniden").

Some commenters proposed easing out-of-band emissions restrictions on unlicensed devices.[8] The Telecommunications Industry Association ("TIA") argued that low power Bluetooth devices operating in the 2.4 GHz ISM band should be exempted from certification requirements.[9] In addition, in response to the Commission's proposal to allow radio frequency identification ("RFID") devices to operate in the 425-435 MHz band with a maximum peak field strength of 110,000 uV/m at 3 meters, two commenters suggested that the Commission explore allowing such devices to operate in the 2.4 GHz band instead.[10]

Discussion

I. THE COMMISSION MUST TAKE ACTION NOW TO UPDATE THE LIMITS ON OUT-OF-BAND EMISSIONS OF UNLICENSED DEVICES TO PROTECT SDARS RECEIVERS

Many commenters from the satellite industry described the interference problems they have encountered from out-of-band emissions of unlicensed radar detectors to licensed VSAT operations.[11] Interference from radar detectors to VSATs is precisely the type of interference scenario XM fears will occur in the next few years as millions of SDARS receivers begin operating in close proximity to millions of unlicensed devices, many of which will operate in the

---

8 *See* Comments of Linear Corporation, ET Docket No. 01-278, at 3 (Feb. 12, 2002) (advocating an out-of-band emissions of limit 700 uV/m at 3 meters for unlicensed devices operating between 2 and 4 GHz) ("Linear"); Comments of The United Telecom Council, ET Docket No. 01-278, at 3 ("[T]he FCC should upon request consider relaxing the emissions limits that would apply to broadband technologies, particularly where the potential for interference is mitigated by other factors.").

9 *See* Comments of the Telecommunications Industry Association, ET Docket No. 01-278, at 6 (Feb. 12, 2002).

10 *See* Comments of ARRL, The National Association for Amateur Radio, ET Docket No. 01-278, at 15 (Feb. 12, 2002) ("ARRL"); Comments of Chamberlain Group, Inc., ET Docket No. 01-278, at 8 (Feb. 12, 2002) ("Chamberlain").

11 *See* Comsearch at 2-3; Hughes at 4-5; Loral at 1-2; PanAmSat at 2; SIA at 2; SES at 2-4; StarBand at 4-7.

same frequency range. As many satellite licensees note, it is not possible to enforce Section 15.5(c) of the Commission's rules, which requires an unlicensed device to cease operating when it interferes with a licensed service, because the unlicensed radar detector is not under the control of the satellite network operator or the customer. Hughes at 2. Usually, the interfering radar detector is used in a passing vehicle. Hughes at 2; Loral at 3; Starband at 11. Hughes comments that the Commission can afford licensed VSAT operators relief only by placing appropriate limits on the manufacture and sale of radar detectors. Hughes at 6. Once unlicensed devices are in the hands of consumers, however, Section 15.5(c) is almost impossible to enforce.

XM faces an identical situation with family radios operating on Channels 8-14 at 467 MHz and various unlicensed devices, such as Bluetooth and IEEE 802.11 devices, operating in the 2.4 GHz band. In many cases, an interfering Bluetooth or other unlicensed device will not be in control of the SDARS customer. For example, an SDARS receiver in a vehicle may suffer interference from an unlicensed device operating in an adjacent vehicle, such as a Bluetooth device enabling hands-free use of a mobile phone, or from a passing pedestrian using a Bluetooth-equipped mobile phone. Like with radar detectors, the device will not be within the control of the consumer experiencing interference and the transient nature of the interfering source makes enforcement of Section 15.5(c) impossible.

Prompt action by the Commission to address this problem represents prudent spectrum management.[12] As XM and Sirius note, the number and type of unlicensed devices are expected to proliferate in the coming years. XM at 4-11; Sirius Petition at 7-13. In its Comments, XM submitted a study demonstrating that the SDARS frequencies at present are free of virtually any

---

12 *See* SIA at 4 (noting the need for the Commission to examine emissions limits from unlicensed devices to avoid repetition of radar problem).

noise. XM at Exhibit B. It is critical to SDARS consumers that the Commission preserve that situation. By taking action now to adopt the out-of-band emissions limits XM and Sirius have proposed for unlicensed devices, the Commission will be taking proactive measures to avoid the very same interference scenario causing problems for the VSAT industry.[13] XM's proposed emissions limits for unlicensed devices are readily achievable and can be met at minimal cost. As XM discussed in its Comments, some unlicensed device manufacturers have already agreed to meet the emissions limits proposed by XM and Sirius, thereby demonstrating that responsible manufacturers have experienced no difficulty in meeting these limits. XM at 22.

Some commenters suggest that the Commission should initiate a separate proceeding to assess the adequacy of current emissions limits of unlicensed devices other than radar detectors to protect satellite services. Hughes at 2, 7; SES at 8-9. As least as far as protection of SDARS is concerned, such an additional step is unnecessary. Both XM and Sirius have presented detailed technical analyses supporting their need for the Commission to update its out-of-band emissions limits for unlicensed devices to protect SDARS receivers. XM at 16-19, Exhibit A; Sirius Petition at 20-26. In addition, interested parties have had more than adequate notice that the Commission could adopt a final rule based on the above-captioned NPRM that would tighten emissions limits of unlicensed devices. In the NPRM, the Commission specifically noted that it was reviewing its emissions limits above 2 GHz to determine whether any changes were warranted. NPRM at ¶¶ 6-7. While the Commission sought comment on two specific issues regarding emissions from unlicensed devices (regarding radar detectors and emissions above

---

13 Neither XM nor Sirius is proposing that any existing unlicensed devices be required to cease operation. Rather, both SDARS licensees have proposed that the Commission apply their proposed field strength limitations only to products sold 18 months after a final rule is published. XM at 23; Sirius Petition at 14 n.36.

38.6 GHz), updating present emissions limits of unlicensed devices to protect SDARS receivers would be a "logical outgrowth" of the present proceeding.[14]

II. THE PROPOSED EMISSIONS LIMITS FOR RADAR DETECTORS TO PROTECT VSATS WOULD NOT BE SUFFICIENT TO PROTECT SDARS RECEIVERS

In their Comments, some satellite network providers propose out-of-band emissions limits for radar detectors to protect VSATs from interference. Hughes, SIA, and SES propose a limit of 30 uV/m at 3 meters[15] while Comsearch proposes a limit of 60 uV/m at 3 meters.[16] While these limits may be sufficient to protect VSAT operations, they are not sufficient to protect SDARS receivers from out-of-band emissions of unlicensed devices. Both XM and Sirius proposed out-of-band emissions limits for unlicensed devices of 18 μV/m at 3 meters measured in a 2 MHz interval for all unlicensed devices operating exclusively inside of vehicles and 8.6 μV/m at 3 meters measured in a 1 MHz interval for unlicensed devices operating in all other environments.

SDARS receivers require a greater level of protection than VSATs because SDARS receivers operate in a mobile environment using omnidirectional antennas that are likely to be located in close physical proximity to interfering unlicensed devices. In discussing the potential for radar detectors to interfere with VSATs, RADAR Members note that VSATs are small and, as a result, are "relatively nondirectional, and are sensitive to signals coming from angles far

---

14 Additional notice and comment is unnecessary where the rule eventually adopted is a "logical outgrowth" of a proposal for which adequate notice and opportunity have been afforded. *See, e.g.,* Hodge v. Dalton, 107 F.3d 705 (1997); National Electrical Manufacturers Association v. EPA, 99 F.3d 1170 (1996); Natural Resources Defense Council, Inc. v. Thomas, 838 F.2d 1224 (1988).

15 Hughes at 7; SIA at 3; SES at 7.

16 Comsearch at 4.

removed from the targeted satellite."[17] Similarly, SES notes that a worst-case interference scenario is presented when emissions from unlicensed devices enter the VSAT antenna in the main lobe. SES at 7. SDARS receivers use unity gain, omnidirectional antennas, meaning that all interfering signals appear in the main lobe of the antenna. RADAR Members also suggest that the interference currently suffered by VSATs may be attributable to poor siting of the antennas. RADAR Members at 4. SDARS receivers operate primarily in vehicles in a mobile environment and thus consumers do not have the ability to site their antennas to avoid interference from unlicensed devices. In addition, SDARS antennas are usually located on the roofs of automobiles, not on the roofs of buildings like many VSATs, meaning that an interfering unlicensed device may be in very close physical proximity to an SDARS antenna. For these reasons, SDARS receivers are much more susceptible to interference than VSATs and therefore require unlicensed devices to meet more stringent emissions limits.

III. THE COMMISSION MUST REJECT REQUESTS TO RELAX EMISSIONS LIMITS FOR UNLICENSED DEVICES THAT MAY INTERFERE WITH SDARS RECEIVERS

Some commenters urge the Commission to relax emissions limits for unlicensed devices.[18] TIA argues that low power Bluetooth devices operating in the 2.4 GHz ISM band should be exempted from certification requirements. TIA at 6. In addition, in response to the Commission's proposal to allow RFID devices to operate in the 425-435 MHz band with a

---

17 Comments of Radio Association Defending Airwave Rights, Inc. Members, ET Docket No. 01-278, at 3 (Feb. 12, 2002) ("RADAR Members").

18 *See* Comments of Linear at 3 (advocating an out-of-band emissions of limit 700 uV/m at 3 meters for unlicensed devices operating between 2 and 4 GHz).

maximum peak field strength of 110,000 uV/m at 3 meters, two commenters suggested that the Commission explore allowing such devices to operate in the 2.4 GHz band instead.[19]

In their Comments, XM and Sirius presented overwhelming evidence that current out-of-band emissions limits for unlicensed devices are inadequate to protect SDARS receivers and must be updated. Thus, any suggestions that the Commission relax emissions limits for unlicensed devices into the SDARS band at 2320-2345 MHz must be rejected. Similarly, any requests to operate new types of unlicensed devices in the 2.4 GHz band, such as RFIDs, must be rejected until the Commission adopts the new, more stringent emissions limits for unlicensed devices proposed by XM and Sirius.

---

[19] *See* ARRL at 15; Chamberlain at 8.

Conclusion

For all of the aforementioned reasons, XM urges the Commission to adopt XM's proposals and to update its Part 15, Part 18, and Part 95 rules to establish, effective 18 months after adoption, an out-of-band emissions limit into the 2320-2345 MHz band of no more than 18 μV/m at 3 meters measured in a 2 MHz interval for all unlicensed devices operating exclusively inside of vehicles and 8.6 μV/m at 3 meters measured in a 1 MHz interval for unlicensed devices operating in all other environments.

Respectfully submitted,

XM RADIO INC.

Bruce D. Jacobs
David S. Konczal
SHAW PITTMAN LLP
2300 N Street, NW
Washington, D.C. 20037
(202) 663-8000

Lon C. Levin
Senior Vice President, Regulatory
XM Radio Inc.
1500 Eckington Place, N.E.
Washington, D.C. 20002
(202) 380-4000

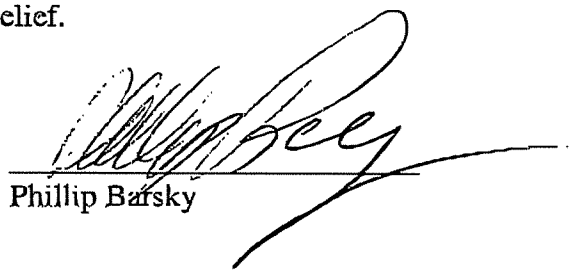
Date: March 12, 2002

Document #: 1222651 v.1

Technical Certification

I, Phillip Barsky, Consultant - Spectrum Management/Regulatory for XM Radio Inc., certify under penalty of perjury that:

I am the technically qualified person with overall responsibility for the preparation of the technical information contained in the above "Reply Comments." The information contained in this document is true and correct to the best of my belief.



Phillip Barsky

Dated: March 12, 2002

CERTIFICATE OF SERVICE

I, Sylvia A. Davis, a secretary with the law firm of Shaw Pittman LLP, hereby certify that on this 13th day of March 2002, served a true copy of the foregoing Reply Comments by first-class United States Mail, postage prepaid, upon the following:

Edwin N. Lavergne
J. Thomas Nolan
Shook, Hardy & Bacon, L.L.P.
600 14th Street, N.W.
Washington, D.C. 20005-2004
Counsel for The Ademco Group

Bernie Liebler
Director, Technology & Regulatory Affairs
AdvaMed
1200 G Street, N.W., Suite 400
Washington, D.C. 20005-3814

Christopher D. Imlay
Booth, Freret, Imlay & Tepper, P.C.
5101 Wisconsin Avenue, N.W., Suite 307
Washington, D.C. 20016-4120
Counsel for ARRL, The National Association for Amateur Radio

Robert S. Bennett
1006 Green Acre Road
Towson, MD 21286-1727

John S. Logan
Scott S. Patrick
Dow, Lohnes & Albertson, PLLC
1200 New Hampshire Avenue, N.W.
Suite 800
Washington, D.C. 20036
Counsel for The Chamberlain Group, Inc.

Thomas P. Van Wazer
Jennifer Tatel
Sidley Austin Brown & Wood LLP
1501 K Street, N.W.
Washington, D.C. 20005
Counsel for Cobra Electronics Corporation

Lester E. Polisky
Director, Field Services
Comsearch
19700 Janelia Farm Boulevard
Ashburn, VA 20147

David A. Nall
Angela M. Simpson
Squire, Sanders & Dempsey L.L.P.
1201 Pennsylvania Avenue, N.W.
P.O. Box 407
Washington, D.C. 20044-0407
Counsel for Consumer Electronics Association

Michael Petricone
Gary S. Klein
Ralph Justus
Consumer Electronics Association
2500 Wilson Boulevard
Arlington, VA 22201

David Donovan, President
Victor Tawill, Senior Vice President
Association for Maximum Service Television, Inc.
1776 Massachusetts Avenue, N.W.
Washington, D.C. 20036

Joseph V. J. Ravenis, II
Cubic Corporation
9333 Balboa Avenue
San Diego, CA 92123

Julian Chultarsky
President
DataBrokers, Inc.
200 Office Park Drive, Suite G
Fairfield, OH 45014

Warren Dickie
270 North Franklin Street
Holbrook, MA 02343

Terry G. Mahn
Robert J. Ungar
Fish & Richardson P.C.
601 12th Street, N.W.
Washington, D.C. 20005
Counsel for Enalasys Inc.

Escort Incoroporated
5440 West Chester Road
West Chester, Ohio 45069

Beltronics USA
5442 West Chester Road
West Chester, Ohio 45069

Glenn A. Namian
Gap, Inc.
Lead Software Developer/Engineer
RFID Systems
4123 Olympic Boulevard, Suite 100
Erlanger, KY 41018

Larry D. Murphy
Director of Engineering
The Genie Company
22790 Lake Park Blvd.
Alliance, OH 44601-5360

Frank B. de Vall
Assa Abloy
Identification Technology Group
Research & Development Center
11674 N. Huron Street
Denver, CO 80234

John P. Janka
Elizabeth R. Park
Latham & Watkins
555 Eleventh Street, N.W., Suite 1000
Washington, D.C. 20004
Counsel for Hughes Network Systems, Inc.

Terry G. Mahn
Robert J. Ungar
Fish & Richardson P.C.
601 13th Street, N.W.
Washington, D.C. 20005
Counsel for Interlogix Inc.

Terry G. Mahn
Robert J. Ungar
Fish & Richardson P.C.
601 13th Street, N.W.
Washington, D.C. 20005
Counsel for Johnson Control Inc.

Terry G. Mahn
Robert J. Ungar
Fish & Richardson P.C.
601 13th Street, N.W.
Washington, D.C. 20005
Counsel for Lifeline Inc.

Garret R. Hargrave
Schwaninger & Associates, P.C.
1331 H Street, N.W., Suite 500
Washington, D.C. 20007
Counsel for Linear Corporation

John Stern
Deputy General Counsel
Loral Space & Communications Ltd.
1755 Jefferson Davis Hwy, Suite 1007
Arlington, VA 22202

William R. Hildebrand
C.O.O.
Operator Specialty Company, Inc.
19 Railroad Avenue
P.O. Box 128
Casnovia, MI 49318

Henk Dannenberg
Manager Customer Application Support
Business Unit Identification, location Boston
25 Forbes Blvd., Suite 4
Foxboro, MA 02035

James A. Stenger
Troutman Sanders LLP
401 9th Street, N.W., Suite 1000
Washington, D.C. 20004-2134
Counsel for Power Line Communications Association

Mitchell Lazarus
Fletcher, Heald & Hildreth, P.L.C.
1300 North 17th Street, 11th Floor
Arlington, VA 22209
Counsel for Safety Warning System, L.C.

Robert L. Pettit
Counsel to Savi Technology
Thomas S. Dombrowsky, Jr.
Engineering Advisor to Savi Technology
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20006

Corinne Murat
Manager, Government Affairs
Mattel, Inc.
333 Continental Boulevard
El Segundo, CA 90244-5012

Joseph A. Godles
Eric J. Schwalb
Goldberg, Godles, Wiener & Wright
1229 Nineteenth Street, N.W.
Washington, D.C. 20036
Counsel for Panamsat Corporation

Mitchell Lazarus
Fletcher, Heald & Hildreth, P.L.C.
1300 North 17th Street, 11th Floor
Arlington, VA 22209
Counsel for Polhemus Incorporated

Mitchell Lazarus
Fletcher, Heald & Hildreth, P.L.C.
1300 North 17th Street, 11th Floor
Arlington, VA 22209
Counsel for Radio Association Defending Airwave Rights, Inc.

Richard DalBello
Executive Director
Satellite Industry Association
225 Reinekers Lane, Suite 600
Alexandria, VA 22314

Phillip L. Spector
Diane C. Gaylor
Paul, Weiss, Rifkind, Wharton & Garrison
1615 L Street, N.W., Suite 1300
Washington, D.C. 20036
Counsel for SES Americom, Inc.

Edgar C. Reihl, P.E.
Principal RF Engineer & Director, Global Compliance
Shure Brothers Incorpoorated
222 Hartrey Avenue
Evanston, IL 60202-3696

Patrick L. Donnelly
Robert D. Briskman
Sirius Satellite Radio
1221 Avenue of the Americas
New York, NY 10020

Nicholas Allard
David Leive
Edward Correia
Tonya Rutherford
Latham & Watkins
555 11th Street, N.W., Suite 1000
Washington, D.C. 20004
Counsel for Sirius Satellite Radio Inc.

Mark P. Bresnahan
Vice President & General Counsel
Lesley B. Cooper
Senior Counsel
Spacenet Inc.
1750 Old Meadow Road
McLean, VA 22102

John Chang
Senior Counsel
StarBand Communications Inc.
1760 Old Meadow Road
McLean, VA 22102

Michael Swiderski
52 Pine Street
Stoughton, MA 02072-1820

Grant E. Seiffert
Derek R. Khlopin
Bill Belt
Telecommunications Industry Association
1300 Pennsylvania Avenue, N.W., Ste. 350
Washington, D.C. 20004

Randal D. Roebuck
Strategic Marketing
Texas Instruments
6550 Chase Oaks Boulevard
MS 8470
Plano, TX 75023

Eric Schmidt, President
The Texas VHF-FM Society, Inc.
P.O. Box 82666
Austin, TX 78708-2666

Phillip Inglis
TRP, Inc.
14085 Howard Road
Dayton, MD 21036

Gregg P. Skall
Patricia M. Chu
Pepper & Corazzini, L.L.P.
1776 K Street, N.W., Suite 200
Washington, D.C. 20006
Counsel for Uniden America Corporation

Brett Kilbourne
United Telecom Council
1901 Pennsylvania Avenue, N.W.
Fifth Floor
Washington, D.C. 20006

Jessee Hopkins
President/CEO
The Whistler Group, Inc.
13016 North Walton Blvd.
Bentonville, AR 72712

Sylvia A. Davis

Document #: 1222318 v.1